

REMARKS

In the Office Action, the Examiner rejected Claims 8, 9, 11, 12, 14, 15 and 17-20 under 35 U.S.C. 101 as directed to non-statutory subject matter. Claims 8, 11 and 14 were further rejected under 35 U.S.C. 102 as being fully anticipated by U.S. Patent 6,044,361 (Kalagnanam, et al.); Claims 9, 12, 15 and 20 were further rejected under 35 U.S.C. 103 as being unpatentable over Kalagnanam, et al. in view of U.S. Patent 4,459,663 (Dye); and Claims 17-19 were further rejected under 35 U.S.C. 103 as being unpatentable over Kalagnanam, et al. Claims 8, 11, 13, 14 and 16-19 were also rejected under 35 U.S.C. 103 as being unpatentable over a document titled "Production Planning and Scheduling" (ACESITA).

In addition, the Examiner, in the Office Action, asked Applicants for additional information. Specifically, the Examiner asked:

1. Applicants to provide any information published prior to 3/31. 2000 which further describes the inventory allocation/reallocation function outlined in ACESITA;
2. Whether the reallocation outlined in the ACESITA document was in use prior to 3/31/1999; and
3. For the dates when IBM Research Reports Nos. RC 21059 and 21171 were first published.

The rejection of the claims under 35 U.S.C. 101 is respectfully traversed. Independent Claims 8, 11 and 14 are being amended to better define the subject matters of these claims. Also, new Claims 21 and 22, which are dependent from Claim 8, are being added to describe preferred or optional features of the invention.

For the reasons discussed below, Claims 8, 9, 11, 12, 14, 15, 17-20 are directed to statutory subject matter and all of Claims 8, 9, 11, 12, 14, 15 and 17-22 patentably distinguish over the prior art and are allowable. The Examiner is, hence, respectfully requested to reconsider and to withdraw the rejections of Claims 8, 9, 11, 12, 14, 15 and 17-20 under 35 U.S.C. 101 and 103 and the rejection of Claims 8, 11 and 14 under 35 U.S.C. 102, and to allow Claims 8, 9, 11, 12, 14, 15 and 17-22.

In response to the Examiner's request for information, Applicants can provide the following:

1. To the best of Applicants' knowledge, there was nothing published prior to 3/31. 2000 regarding the allocation/reallocation problem outlined in ACESITA;
2. The reallocation outlined in ACESITA was not in use prior to 3/31/1999; and
3. IBM Research Report RC 21059 was first published on November 17, 1999, and IBM Research Report RC 21171 was first published on May 4, 1998.

The rejection of Claims 8, 9, 11, 12, 14, 15 and 17-20 under 35 U.S.C. 101 is respectfully traversed because these claims are directed to statutory subject matter under 35 U.S.C. 101.

In rejecting the claims under 35 U.S.C. 101, the Examiner argued that these claims are non-statutory because they are not concrete and tangible, and no result or output is presented.

Applicants respectfully disagree. These claims provide a specific result – allocating finished units to received customer orders - that is practical, tangible and useful. As discussed in the present application, allocating finished units to received customer orders is important and useful and, moreover, can be difficult. The instant invention effectively addresses a number of difficult factors involved in this allocation. These difficult factors include different customer requirements and imperfections in the finished units.

Each of the independent Claims 8, 11 and 14 set forth specific, tangible, physical features. For instance, each of these claims describes finished units in a production facility, and orders from customers. These claims do not describe merely an abstract idea, but instead set forth specific functions and feature, and describes how those functions and features are used to achieve a specific, practical result – allocating those finished units to those customer orders.

For the reasons set forth above, the independent Claims 8, 11 and 14 and the dependent Claims 9, 12, 15 and 17-20 are directed to statutory subject matter under 35 U.S.C. 101. The Examiner is thus respectfully requested to reconsider and to withdraw the rejection of these claims as non-statutory.

In addition, all of these claims also patentably distinguish over the prior art because the prior art does not disclose or suggest the feature that, when it is necessary to unassign an assigned unit in order to satisfy a given order, identifying the smallest order that can be unassigned to satisfy that given order, as described in independent Claims 8, 11 and 14.

To elaborate, the present invention relates to allocating materials in a production facility to customer orders. An important aspect of the invention is that it takes into account defects on the surface of a piece of material and the customer requirements. More specifically, the preferred embodiment of the instant invention will allocate and reallocate orders to precise regions of coils (material) so that the minimum quality of an order is not violated while also minimizing waste of material.

The preferred material reallocation algorithm of the present invention starts by listing all incomplete orders by due dates. Going down the list, the algorithm assigns incomplete orders to available areas of the coils (pieces of material). If no available area is found, the algorithm identifies which is the smallest order that can be unassigned in order to open space for the incomplete order. The algorithm continues doing this until all orders are completed, or no more options of reallocation are found.

The prior art does not show identifying this smallest filled order that can be unassigned to open space for the incomplete order/

For example, Kalagnanam, et al. discloses a computer implemented inventory matching method based on multiple assignments per iteration. This method has four major steps. In the first step, a feasible solution is created by applying an iterative bipartite matching on a given initial solution. The second step involves improving the solution by solving a max flow problem; and in the third step, a multi-key sort is used to identify undesirable matches in a given feasible solution. The fourth step is to backlift the solution by removing the undesirable matches from the feasible solution.

Kalagnanam, et al. thus involves identifying multiple possible solutions and then determining the best one of those possible solutions.

The present invention is different. Instead of identifying multiple solutions, the instant invention processes the customer orders to identify one solution. During this processing, orders are assigned and then may be unassigned.

Independent Claims 8, 11 and 14 are herein being amended to describe the above-discussed feature of the present invention. In particular, Claims 8 and 11 describe the feature that, when no available valid unit fulfills a given one, incomplete order, valid units previously assigned to other orders are searched for a unit that fulfills that given one order. Claims 8 and 11 are being amended herein to indicate that this searching is done by identifying the smallest order that can be unassigned in order to satisfy said given one, incomplete order.

Claim 11 is being amended to describe analogous apparatus limitations. Claim 11 includes means for iteratively assigning and unassigning the units to the orders. If no available valid units fulfill a given one, incomplete order, then valid units previously assigned to other orders are searched for a unit that fulfills that given one order; and if a unit, previously assigned to some other order, is found that fulfills that given one order, then that found unit is unassigned from that other order and reassigned to the given order. Moreover, as amended herein, this searching is done by identifying the smallest order that can be unassigned in order to satisfy said given one, incomplete order.

The other references of record have been reviewed, and these other references, whether considered individually or in combination, also do not disclose or suggest this feature of the invention.


ACESITA describes preliminary ideas of the present invention. An important feature of the ACESITA system is the capacity of considering the current conditions of a piece of material and verifying what further manufacturing steps are necessary to transform that material so that it will fit an order. ACESITA does not disclose, though, the allocation and reallocation of orders to precise regions of coils (materials) so that the minimum quality of an order is not violated while minimizing waste of material.

Also, Dye deals with allocating quantity of material to manufacturing orders in a discrete manufacturing production line, without simulating the different manufacturing options that material could be submitted in order to be manufactured. The present invention goes further and is concerned with the geometrical constraints of the defects and of the order requirements, not discrete manufacturing.

In light of the above-discussed differences between Claims 8, 11 and 14 and the prior art, and because of the advantages associated with those differences, it cannot be said that any of these claims is anticipated by or is obvious in view of the prior art. Accordingly, Claims 8, 11 and 14 patentably distinguish over the prior art and are allowable. Claims 9, 17 and 20-22 are dependent from Claim 8 and are allowable therewith. Also, Claims 12 and 18 are dependent from Claim 11 and are allowable therewith; and Claims 15 and 19 are dependent from, and are allowable with, Claim 14. The Examiner is accordingly, respectfully asked to reconsider and to withdraw the rejections of Claims 8, 11 and 14 under 35 U.S.C. 102, and the rejections of Claims 8, 9, 11, 12, 14, 15 and 17-20 under 35 U.S.C. 103, and to allow Claims 8, 9, 11, 12, 14, 15 and 17-22.

For the reasons advanced above, the Examiner is respectfully requested to reconsider and to withdraw the rejections of Claims 8, 9, 11, 12, 14, 15 and 17-20 under 35 U.S.C. 101 and 103 and the rejection of Claims 8, 11 and 14 under 35 U.S.C. 102, and to allow Claims 8, 9, 11, 12, 14, 15 and 17-22. If the Examiner believes that a telephone conference with Applicants' Attorneys would be advantageous to the disposition of this case, the Examiner is asked to telephone the undersigned.

Respectfully Submitted,


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